

Open Carbonate Ramp Facies, Microfacies and Paleoenvironments of the Gramme Formation (Upper Cretaceous), Pernambuco-Paraiba Basin, Northeastern Brazil

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The monotonous carbonates of the Maastrichtian Gramame Formation can be divided into eleven microfacies, but these do not correspond with the five major facies distinguished in the field. The microfacies were grouped into six composite microfacies which were used to construct a depositional model. In this model, tectonic disturbances of a relatively steeply sloping carbonate ramp caused apparently random occurrences of coarser and sandier bioclastics and influx of clastic material into generally mid- outer-ramp environments. Only the central section of the carbonate ramp is exposed in a strike section. Shallower and deeper facies must be inferred from the transgressive nature of the sequence. Dolomitization is ubiquitous but apparently random. The closest modern analogy of the Gramame Formation is the relatively steep West Florida ramp. However this does not have fault-bounded shallows, for which analogies can be found on the shelf of the Arabian Gulf. Combining features from both of these allows a plausible reconstruction to be made of Gramame Formation environments. We envisage a steeply sloping ramp cut by horsts and grabens related to the opening of the south Atlantic ocean.